D 40800 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2007

EE 2K 704—POWER SYSTEMS—II

(New Scheme)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) Compare different loadflow techniques based on the time and number of iterations required for convergence.

(b) Form the Y_{bus} matrix of the system shown in Fig. 1 given below :

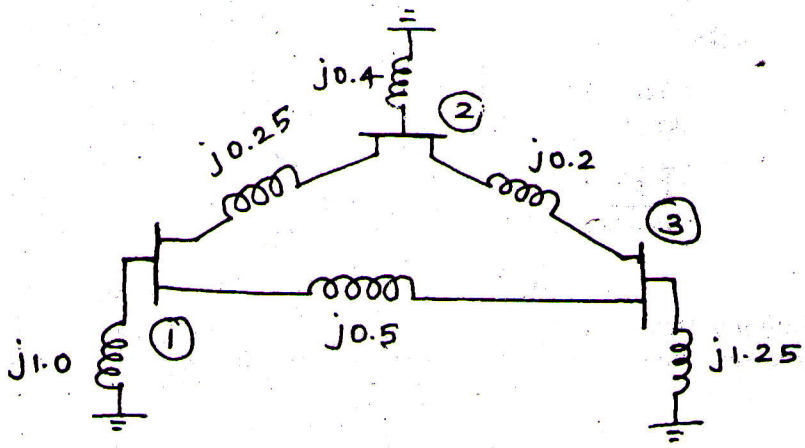

Fig. 1

(c) Discuss about automatic load despatching.

(d) Write the objective function and the constraint equations of economic despatch of thermal powerplants including transmission line loss.

(e) Discuss the unsymmetrical faults in power system.

(f) Derive the relevant expressions to show how sequence networks are to be connected to analyse double line to ground fault.

(g) List the type of stability studies in power system.

(h) List few methods to improve the transient stability of a system.

(8 × 5 = 40 marks)

II. (a) Draw the flowchart for Newton-Raphson loadflow algorithm with necessary equations in polar co-ordinates.

Or

(b) Draw the flowchart for Gauss-Seidel load flow algorithm with necessary equations.

Turn over

III. (a) **Describe any *one* method of optimal load flow solution with necessary equations.**

Or

(b) **With neat sketch explain the Automatic Voltage Regulation of a generator. Provide the block diagram of a voltage regulator scheme with required transfer functions.**

IV. (a)

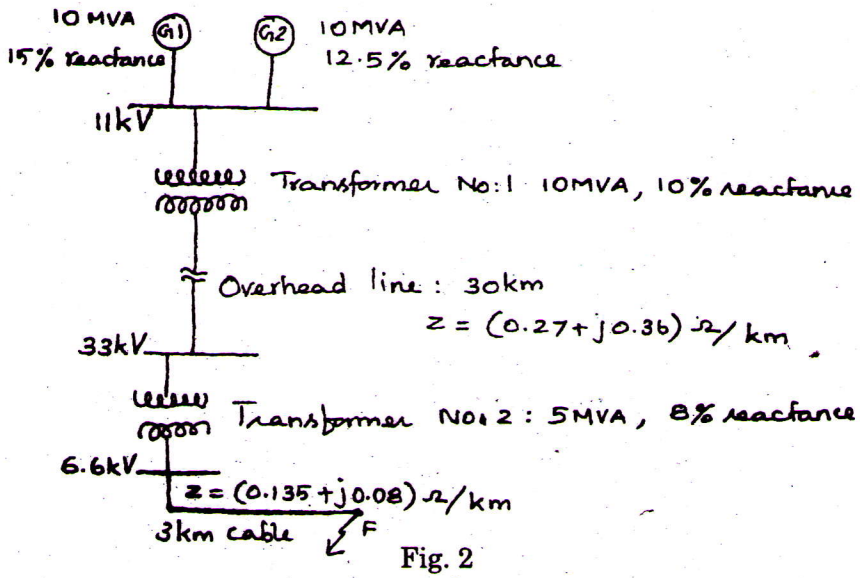

Fig. 2

For the radial network shown in Fig. 2, a three-phase fault occurs at F. Determine the fault current and the line voltage at 11 kV bus under fault conditions.

Or

(b) **Using the symmetrical components derive the sequence networks of the synchronous machine shown in Fig. 3**

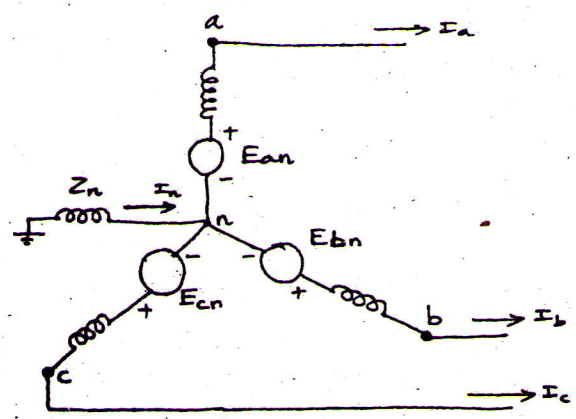

Fig. 3

V. (a) **Derive the expressions for critical clearing angle and critical clearing time in equal area criterian of stability study.**

Or

(b) **Describe Euler's method for carrying out a transient stability study of a single machine system, with a neat flow chart and necessary equations.**

(4 × 15 = 60 marks)